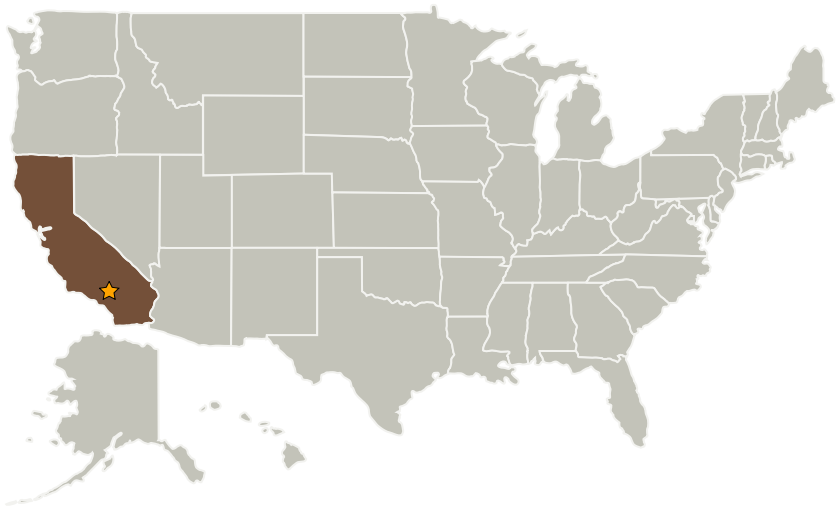
Novel MAV Air Data System, Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

The development of Micro Air Vehicles (MAVs) has received considerable attention in recent years for both military and civilian uses. MAVs typically suffer from operation in an extremely low Reynolds number flight regime. At these very low Reynolds numbers, the aerodynamic flow features can be nonlinear and are dominated by laminar separation and separation bubble effects, which can be a source of poor performance from both an aerodynamic and stability and control standpoint. If a stable platform is required for sensor effectiveness, or the vehicle is to be controlled by a relatively inexperienced operator, controllability of a vehicle operating in this very low Reynolds number regime can be a critical factor in determining the success or failure of a design. Flight control systems implemented on this class of vehicles are severely constrained in size and available power. They suffer from inadequate knowledge of the vehicle state, both statically and dynamically. Rolling Hills Research Corporation proposes to use a simple and robust biologically inspired air data system capable of providing instantaneous vehicle state information, including rates, to provide revolutionary stability, control, and performance for these ultra low Reynolds number vehicles.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Armstrong Flight Research Center (AFRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Armstrong Flight Research Center(AFRC)	Lead Organization	NASA Center	Edwards, California
Rolling Hills Research Corporation	Supporting Organization	Industry	El Segundo, California

Primary U.S. Work Locations
California

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Michael Kerho

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.3 Aeroelasticity